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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/668,679

09/23/2003

Emanuele Ostuni

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1051

7590

07/03/2006

Timothy J. Oyer, Ph.D.
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EXAMINER

NAFF, DAVID M

ART UNIT

PAPER NUMBER

1651

DATE MAILED: 07/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/668,679

Applicant(s)

OSTUNI ET AL

Examiner

David M. Naff

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 28-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/27/05.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

A response of 4/4/06 to a restriction requirement of 3/6/06 elected Group I claims 1-27 with traverse on the ground that a single search and examination will not be an undue burden on the examiner.

5 However, due to differences in claims of the different inventions as noted in the restriction requirement, a serious burden will result from a single search and examination due to different considerations relating to each invention. The restriction requirement is adhered to and made final.

10 Claims 28-39 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 4/4/06.

Claims examined on the merits are 1-27.

15 ***Specification***

The disclosure is objected to because of the following informalities: the abstract is objected to as being two paragraphs and too long. The abstract should be one paragraph and not more than 150 words.

20 Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C.

112:

25 The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 1-25 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the
5 invention.

The claims are confusing and unclear by not requiring the fluid applied to the surface to contain a material that is subsequently allowed to deposit. Additionally, in claims 1 and 2, allowing the material to deposit on the substrate is confusing since the fluid in
10 claim 1 contacts the protrusion and in claim 2 contacts the recess. Claim 1 should require the material to deposit on the protrusion where the fluid contacts the protrusion and claim 2 should require the material to deposit on the recess where the fluid contacts the recess.

Claim 2 is unclear where the second material deposits on the
15 substrate, i.e. only on the recess or on both the recess and the protrusion. While the claim requires the second fluid to contact the recess, the claim does not exclude the fluid from contacting the protrusion, and as shown in Figure 3 the second fluid contacts both the recess and protrusion.

20 Claims 20-23 are unclear by requiring the recess or protrusion to comprise a plurality of recesses or protrusions. The terms "recess" and "protrusion" are singular and cannot comprise a plurality. Claims 20 and 22 should replace "recess" and "protrusion", where occurring in line 1 with --- surface ---.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

5 (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the
10 invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly
15 owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35
20 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ostuni et al (6,893,850 B2) in view with Clem et al (6,518,168 B1).

25 The claims are drawn to method for selectively depositing a material on a substrate including a contoured surface including a protrusion and a recess by applying a first fluid to the surface such that the fluid contacts the protrusion, and allowing a first material

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to deposit on the substrate where the substrate is in contact with the first fluid.

Ostuni et al disclose patterning a surface by applying to the surface a mask that covers a portion of the surface and allows other portions of the surface to remain uncovered. Cells or another material such as a cell-adhesion promoter is applied to the portions of the surface that remain uncovered. For example, see col 3, line 38 to col 6, line 18.

Clem et al disclose creating a pattern of a material deposited on a surface by forming a self-assembled monolayer (SAM) in a pattern on a surface, and depositing on the surface a material in a pattern complementary to the self-assembled monolayer pattern. The surface can be a contoured surface having trenches or holes where the trenches or holes remaining free of self-assembled monolayer while the remainder of the surface is coated. For example, see the abstract. The SAM can be applied to outward-facing surfaces of protrusions of an article containing protrusions and indentations (col 3, lines 24-31, and col 7, lines 42-52). The SAM can have a functionality that selectively binds various biological and chemical species (col 12, lines 10-22).

It would have been obvious to use the procedure of Ostuni et al to deposit cells or a cell-adhesion promoter in a pattern on a surface having protrusions and indentations as suggested by Clem et al depositing a SAM having a functionality that can bind a biological species in a pattern on a surface having protrusions and indentations.

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Since Clem et al disclose that the SAM can be deposited on the surfaces of the protrusions, it would have been obvious to deposit the cells or cell-adhesion promoter on the protrusions and not the indentations by masking the indentations before applying the cells or cell-adhesion promoter. The indentations of Clem et al are recesses. Whether to apply the cells or cell-adhesion promoter to the protrusions or indentations would have been a matter of choice depending on intended function and use. Clem et al suggest applying cells or proteins to protrusions for study (col 9, lines 30-38). The claims do not exclude using a mask to prevent depositing of the cells or cell-adhesion promoter in recesses. Ostuni et al disclose that the cell-adhesion promoter can be applied from solution (col 5, lines 7-10), and after masking recesses (indentations), it would have been obvious to contact the protrusions with a solution containing the cell-adhesion promoter that it can be deposited on the protrusions. The cell-adhesion promoter of Ostuni et al can be a protein (col 7, line 53), and depositing a protein in claims 4 and 5 would have been obvious. Clem et al also suggest depositing a protein on the outward-facing surfaces of protrusions (col 9, lines 30-37). In view of Ostuni et al disclosing applying first and second cell-adhesion promoters (col 9, lines 24-31) and Clem et al disclosing applying a functionality that is a member of a binding pair (col 12, lines 15-22), it would have been obvious to apply second and third materials as in claims 2 and 3. Using a microwell as a recess as in claims 9-12 would have been obvious in view of Ostuni et al disclosing wells

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resulting from holes in the mask (col 4, lines 20-26). The protrusions disclosed by Clem et al are microprotrusions as required by claims 13-16. Using polydimethylsiloxane to form the substrate as in claim 19 would have been obvious from Ostuni et al disclosing the use of this polymer to form a mask (col 4, line 7).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David M. Naff whose telephone number is 571-272-0920. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David M. Naff
Primary Examiner
Art Unit 1651

DMN
6/26/06